

MONTHLY NOTICES

OF THE

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No. 5

EDWARD JAMES STONE, M.A., F.R.S., Vice-President, in the Chair.

Arthur Gibbons, Science, Art, and Technical School, Brierley Hill, Dudley,

was balloted for and duly elected a Fellow of the Society.

The following candidates were proposed as Fellows of the Society, the names of the proposers from personal knowledge being appended :—

The Rev. W. H. Addison, 8 West Chapel Street, Mayfair, W., (proposed by Edmund J. Spitta) ;

Henry Baynham, Lieutenant, R.N., Captain of H.M.S. "Wellesley" Training Ship (proposed by David Gill) ;

Humphrey Barker Chamberlin, 1033 Sixteenth Street, Denver, Colorado, U.S.A. (proposed by H. H. Turner) ;

Otto Jaffe, German Consul, Kin Edar, Strandtown, Belfast, Ireland (proposed by J. L. E. Dreyer) ;

Charles Henry Johns, M.A., Althorpe House, Waverley Grove, Hendon, Middlesex (proposed by J. D. McClure) ;

William Grant MacGregor, 18 Coleman Street, E.C. (proposed by R. Grant) ;

Captain R. Reynolds, Lieutenant, R.N.R., U.S.S. "Pretoria," Southampton (proposed by D. Forbes) ;

Albert Edward Watson, B.A., F.R.Met.Soc., Whitgift Grammar School, Croydon (proposed by Charles B. Neate).

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One hundred and twelve presents were announced as having been received since the last ordinary meeting, including, amongst others :—

The Milky Way, drawn at the Earl of Rosse's Observatory, Birr Castle, by Otto Böddicker, presented by the Earl of Rosse ; Comparative Photographic Spectra of the Sun and Metals, and Comparative Photographic Spectra of the High Sun and Low Sun, presented by F. McClean ; Photographs of the Spectroscope at the Kenwood Physical Observatory, Chicago, presented by G. E. Hale ; Telegraphic Longitudes in Western Australia, presented by the Hydrographer ; Recherches sur la Rotation du Soleil, presented by N. C. Dunér ; O. Böddicker, Lunar Radiant Heat, measured at Birr Castle Observatory, presented by the Earl of Rosse.

On the Dynamics of the Earth's Rotation, with respect to the Periodic Variations of Latitude. By Simon Newcomb.

The recent remarkable discovery of Mr. S. C. Chandler, that the axis of rotation of the Earth revolves around the axis of maximum moment of inertia in a period of about 427 days, is worthy of special attention.* At first sight it seems in complete contradiction to the principles of dynamics, which show that the ratio of the time of such a rotation to that of the Earth's revolution should be equal to the ratio of the polar moment of inertia of the Earth to the difference between the equatorial and the polar moments. Representing these moments by A and C, it is well known that the theory of rotation of a rigid body gives the equation

$$\tau = \frac{A}{C-A},$$

τ being the period of rotation of the pole in sidereal days.

Now the ratio in question is given with an error not exceeding a few hundredths of its total amount by the magnitude of the precession and nutation. The value found by Oppolzer is

$\frac{1}{305}$, giving the time of rotation as 305 days.

This result has long been known, and several attempts have been made to determine the distance between the two axes, especially at Pulkova and Washington. A series of observations was made with the Washington Prime Vertical Transit during the years 1862–1867, including six complete periods of the inequality. Thus the determination of the coefficient and zero of the argument is completely independent of all sources of error having an annual or diurnal period. Such errors are

* *Astronomical Journal*, Numbers 248, 249.